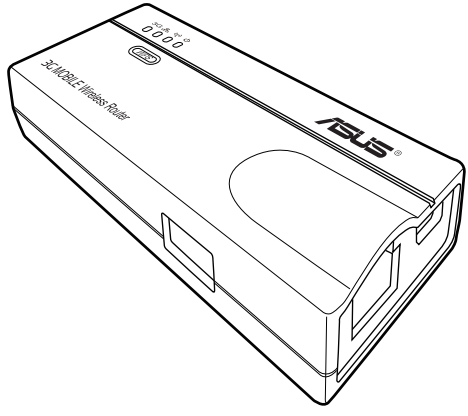
3G Mobile Wireless Router (WL-330N3G)



User Guide

E6069

First Edition
January 2011

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Notices

Federal Communications Commission Statement

This device complies with Part 15 of the Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION! Changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

3G USB Adapter Purchase Information

- The customer should purchase the 3G USB Adapters which shalle be FCC approved.
- 3G USB Adapters must not exceed a maximum ERP of 1.5W for part 22H.
- 3G USB Adapters must not exceed a maximum EIRP of 2W for part 24E.

RF Exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Reprinted from the Code of Federal Regulations #47, part 15.193, 1993. Washington DC: Office of the Federal Register, National Archives and Records Administration, U.S. Government Printing Office.

Safety statements

Regulatory Information/Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications (including the antennas) made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution of the connecting cables and equipment other than the manufacturer specified. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. Manufacturer and its authorized dealers or distributors will assume no liability for any damage or violation of government regulations arising from failing to comply with these guidelines.

Safety Information

In order to maintain compliance with the FCC RF exposure guidelines, this equipment should be installed and operated with minimum distance [20cm] between the radiator and your body. Use only with supplied antenna.

Unauthorized antenna, modification, or attachments could damage the transmitter and may violate FCC regulations.

CAUTION! Any changes or modifications not expressly approved in this manual could void your authorization to use this device.

MPE Statement

Your device contains a low power transmitter. When device is transmitted it sends out Radio Frequency (RF) signal.

Caution Statement of the FCC Radio Frequency Exposure

This Wireless LAN radio device has been evaluated under FCC Bulletin OET 65C and found compliant to the requirements as set forth in CFR 47 Sections 2.1091, 2.1093, 15.247(b)(4) addressing RF Exposure from radio frequency devices. The radiation output power of this Wireless LAN device is far below the FCC radio frequency exposure limits. Nevertheless, this device shall be used in a manner that the potential for human contact during normal operation - as a mobile or portable device but use in a body-worn way is strictly prohibited. When using this device, a certain separation distance between antenna and nearby persons has to be kept to ensure RF exposure compliance. In order to comply with the RF exposure limits established in the ANSI C95.1 standards, the distance between the antennas and the user should not be less than 20cm.

RF Exposure

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

REACH

Complying with the REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at http://scr.asus.com/english/REACH.htm

About this guide

This user guide contains information that you need to install and configure your ASUS Mobile Wireless Router.

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**

  This chapter describes the physical features of the ASUS Mobile Wireless Router. This part also presents the package contents, LED indicators, and recommended network settings.
- **Chapter 2: Hardware installation**

  This chapter provides information on how to install the ASUS Mobile Wireless Router.
- **Chapter 3: Utilities**

  This chapter provides information on how to configure the ASUS Mobile Wireless Router using the utilities available from the support CD.
- **Chapter 4: Configuration**

  This chapter provides instructions on how to configure the ASUS Mobile Wireless Router using the web graphics user interface (web GUI).
- **Chapter 5: Using the device**

  This chapter provides instructions on how to use the ASUS Mobile Wireless Router on various network setups.
- **Appendix: Troubleshooting**

  The Appendix features a troubleshooting guide for solving common problems you may encounter when using the ASUS Mobile Wireless Router.

Conventions used in this guide

WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to aid in completing a task.

ASUS contact information

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Online support	support.asus.com

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Technical Support

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Fax	+49-2102-959911
Web site	www.asus.de
Online contact	www.asus.de/sales

Technical Support

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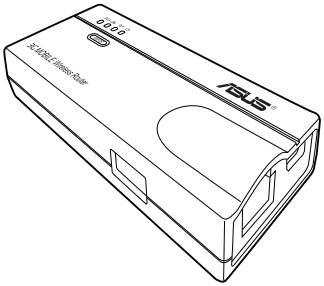
Telephone (System/Notebook/Eee/LCD)	+49-1805-010920*
Support Fax	+49-2102-9599-11
Online support	support.asus.com

* EUR 0.14/minute from a German fixed landline; EUR 0.42/minute from a mobile phone.

Chapter 1



This chapter describes the physical features of the ASUS Mobile Wireless Router. This part presents the package contents, LED indicators, and recommended network settings.

Product introduction

1.1 Welcome!

Thank you for choosing the ASUS Mobile Wireless Router!

The ASUS Mobile Wireless Router is a compact, portable, and easy-to-install device that combines access point (AP), router, universal repeater, Ethernet adapter, hotspot, and 3G sharing functions into one. Implementing the IEEE 802.11n standard for wireless technologies, the ASUS Mobile Wireless Router is capable of up to 150Mbps data transmission rate. This router is backward compatible with the earlier IEEE 802.11g standard allowing seamless interfacing of both wireless LAN standards.

The ASUS Mobile Wireless Router also supports several wireless network configuration including AP, Infrastructure, and Ad-hoc modes giving you flexibility on your existing or future wireless network configurations.

To provide efficient security to your wireless communication, ASUS Mobile Wireless Router comes with a 64-bit/128-bit Wired Equivalent Privacy (WEP) encryption and Wi-Fi Protected Access (WPA) features.

1.2 Package contents

Check the following items in your ASUS Mobile Wireless Router package. Contact your retailer if any item is damaged or missing.

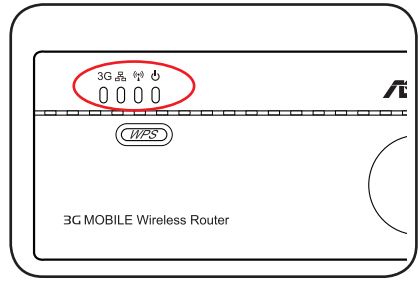
- ☑ ASUS Mobile Wireless Router (WL-330N3G)
- ☑ Universal power adapter and plug (100V ~ 240V)
- ☑ Micro USB power cord
- ☑ RJ45 cable
- ☑ Support CD (manual, utilities, GPL)
- ☑ Quick Start Guide
- ☑ Carry bag
- ☑ Car charger *(for European market only)*

1.3 Features

- Data transfer rate up to 150Mbps
- Secure data transmission via Wired Equivalent Privacy (WEP) and WiFi Protected Access (WPA) encryptions
- Operating distance of up to 130ft (40m) indoors and 1000 ft (310m) outdoors
- Dual power mode (DC or Micro USB bus-powered)
- Supports Infrastructure and Ad-hoc network types in Ethernet adapter mode
- Windows® 98SE / Me / 2000 / XP / Vista / 7 / Mac OS compatible

1.3.1 Top view

The ASUS Mobile Wireless Router comes with 3G, Ethernet, Wireless, and Power LED indicators. Refer to the table below for LED indicators



LED	Status	Mode*	Indication
3G	On (Blue)	3GS	The USB 3G adapter is connected successfully.
	On (Red)		Lights up in 5 minutes after the USB 3G adapter connection failed.
	Flashing		Establishing 3G connection
	Off		No USB 3G adapter is connected.
Ethernet	On	Router/AP/EA/URE/ HS/3GS	The RJ-45 cable is connected and the mobile wireless router is connected to an Ethernet network.
	Flashing		Transferring data
	Off		The mobile wireless router is not connected to an Ethernet network.

Ensure that all ISP settings (such as APN, Dial number, PIN, username, and password) are correct.

Check if your wireless router supports your 3G dongle at **http://event.asus.com/2009/networks/3gsupport**.

LED	Status	Mode*	Indication
Wireless	On	Router/AP/URE/ HS/3GS	Associated.
		EA	Associated with an AP.
	Flashing	Router/AP/URE/ HS/3GS/EA	Associating.
Power	On	Router/AP/EA/URE/ HS/3GS	The mobile wireless router is on and ready.
	Flashing	Router/AP/EA/URE/ HS/3GS WPS setting	The mobile wireless router is under “reset to default” mode or under “rescue” mode. WPS setting is in process.
	Off	Router/AP/EA/URE/ HS/3GS	The device is off.

*Modes: **AP**: Access Point mode

EA: Ethernet adapter mode

URE: Universal repeater mode

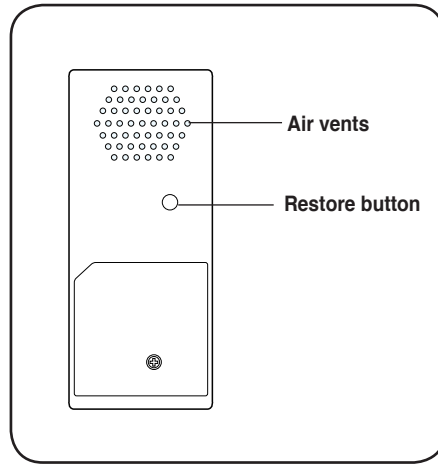
HS: Hotspot mode

3GS: 3G Sharing mode

1.3.2 Bottom view

Restore button: Using a pen or paper clip, press this button for five second or until the power LED starts blinking.

Air vents: These vents provide ventilation to the device.

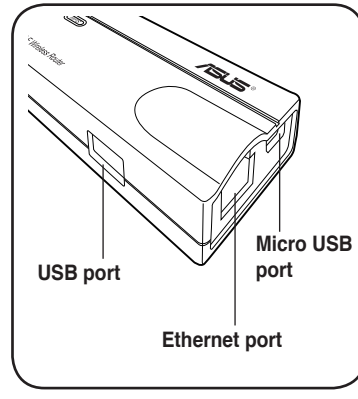


1.3.3 Ports

Ethernet port: This port connects the bundled RJ-45 cable.

Micro USB port: This port connects the power adapter plug or the bundled micro-USB cable.

USB port: This port connects USB devices.



1.4 Recommended network settings

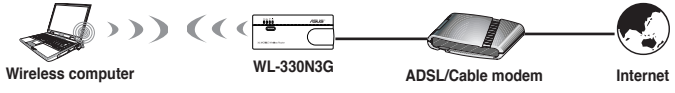
In the WPS Wizard, you can confiure WPA2-Personal, WPA-Personal, or Open system. You can complete the share key and advanced security setup in the Advanced Settings page.

The ASUS Mobile Wireless Router can be configured in one of these modes:

1. Router mode
2. Access Point (AP) mode
3. Ethernet Adapter mode
4. Repeater mode
5. Hotspot mode
6. 3G sharing mode

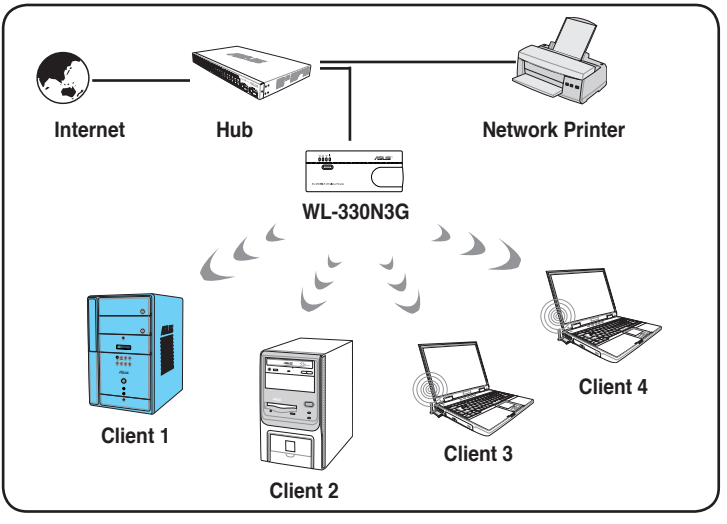
1.4.1 Router mode

In the Router mode, the ASUS WL-330N3G connects to the Internet via an ADSL or a cable modem, and your network environment has multi-users using the same IP to ISP.



1.4.2 Access Point (AP) mode

When in access point (AP) mode the WL-330N3G connects WLAN-enabled computers and devices to a wired or wireless LAN.



1.4.3 Ethernet Adapter mode

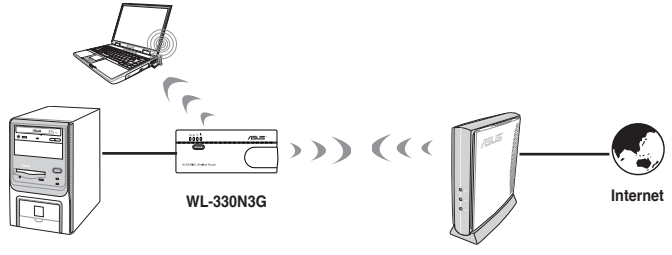
In the **Ethernet Adapter mode**, you can enable any Ethernet-capable device to go wireless.

1.4.4 Repeater mode

In the **Repeater mode**, you can use the ASUS WL-330N3G to connect with your root router at home to extend your wireless coverage.

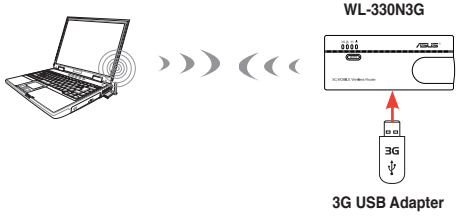
1.4.5 Hotspot mode

In Hotspot mode, WL-330N3G connects front-end base stations wirelessly and obtains WAN IP to an Internet connection. It provides you with wireless radio signal.

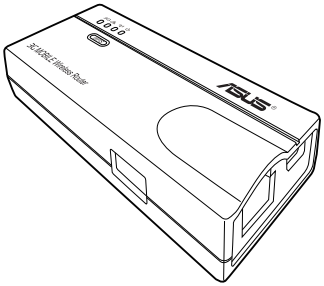


1.4.6 3G Sharing mode

In 3G Sharing mode, you are allowed to share 3G Internet connection among other Wi-Fi available devices.



Chapter 2



This chapter provides information on how to install the ASUS Mobile Wireless Router.

Hardware installation

2.1 System requirements

Before installing the ASUS Mobile Wireless Router, make sure that your system/ network meets the following requirements:

- An Ethernet RJ-45 port (10-100Base-T)
- At least one IEEE 802.11b/g/n device with wireless capability
- An installed TCP/IP and Internet browser

2.2 Device installation

Follow these instructions to install the ASUS Mobile Wireless Router.

1. Install the device utilities from the support CD.
2. Connect the device to your computer, network hub, switch, or router.

2.2.1 Before you proceed

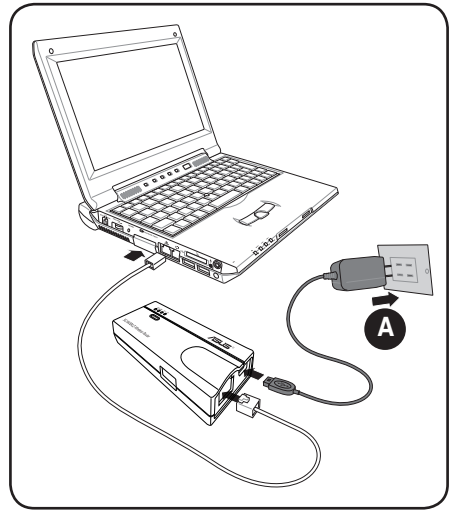
Take note of the following guidelines before installing the ASUS Mobile Wireless Router.

- The length of the Ethernet cable that connects the device to the network (hub, ADSL/cable modem, router, wall patch) must not exceed 100 meters.
- Place the device on a flat, stable surface as far from the ground as possible.
- Keep the device clear from metal obstructions and away from direct sunlight.
- Keep the device away from transformers, heavy-duty motors, fluorescent lights, microwave ovens, refrigerators, and other industrial equipment to prevent signal loss.
- Install the device in a central area to provide ideal coverage for all wireless mobile devices.
- Install the device at least 20cms from a person to insure that the product is operated in accordance with the RF Guidelines for Human Exposure adopted by the Federal Communications Commission.

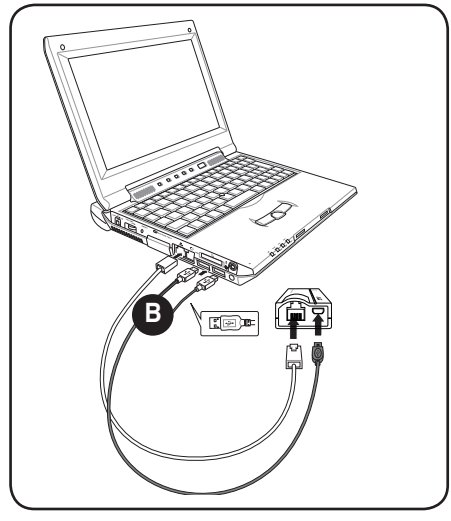
2.2.2 Installing the device

1. Insert one end of the supplied RJ-45 cable to the WL-330N3G Ethernet port.
2. Insert the other end of the RJ-45 cable to your computer.
3. Do either of the following:

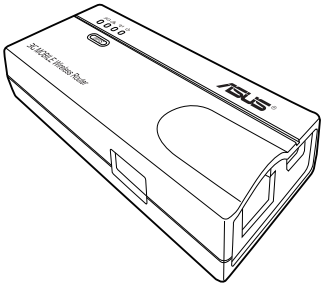
Connect the power adapter plug to the WL-330N3G DC-IN socket and connect the power adapter to a wall socket (A).



Connect the USB power cord plug to the WL-330N3G DC-IN socket and connect the USB connectors into your computer's USB ports (B).



Chapter 3

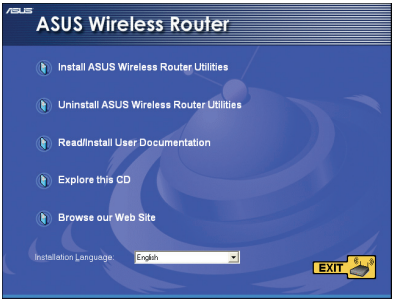


This chapter provides information on how to configure the ASUS Mobile Wireless Router using the utilities available from the support CD.

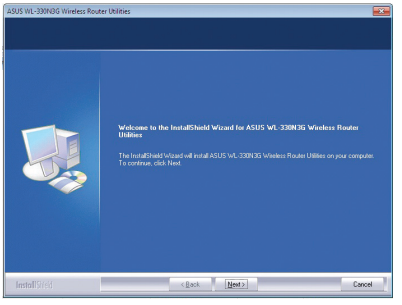
Utilities

3.1 Installing the utilities

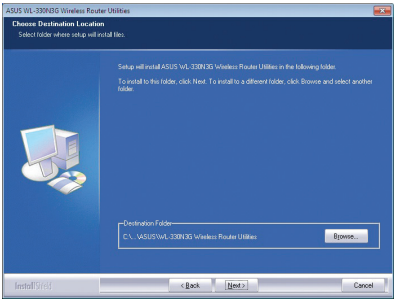
The support CD contains the utilities for configuring the ASUS Mobile Wireless Router. To install the ASUS WLAN Utilities in Microsoft® Windows, insert the support CD in the CD drive. If Autorun is disabled, run setup.exe from the root directory of the support CD.



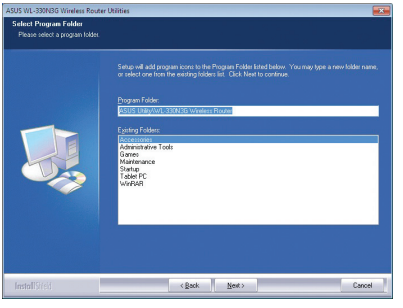
1. Click **Install...Utilities.**



2. Click **Next.**

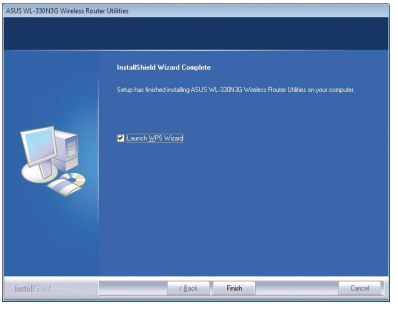


3. Click **Next** to accept the default destination folder or click **Browse** to specify another path.



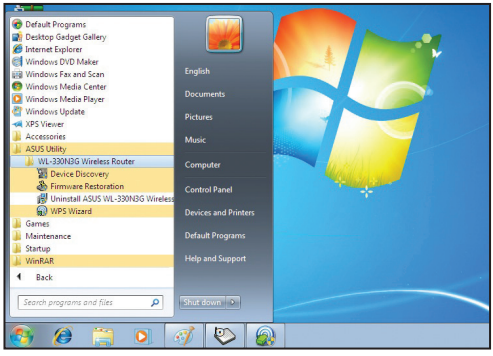
4. Click **Next** to accept the default program folder or enter another name.

5. Click **Finish** when setup is complete.



3.1.1 Launching the utilities

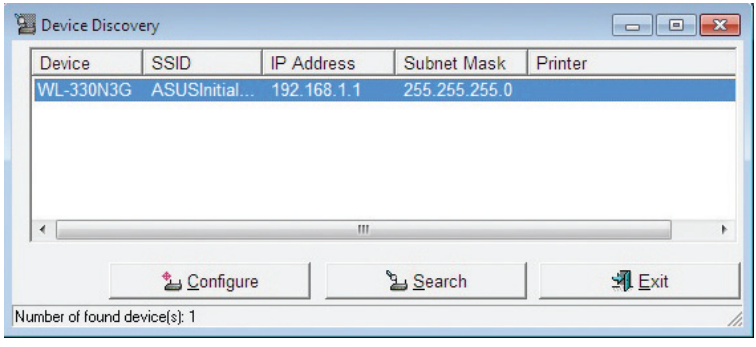
To launch the utilities, click **Start > All Programs > ASUS Utility** from the Windows desktop.



Device Discovery

Device Discovery is an ASUS WLAN utility which detects an ASUS device, and enables you to configure the device.

To launch the Device Discovery utility, click **Start > All Programs > ASUS Utility > WL-330N3G Wireless Router > Device Discovery**.

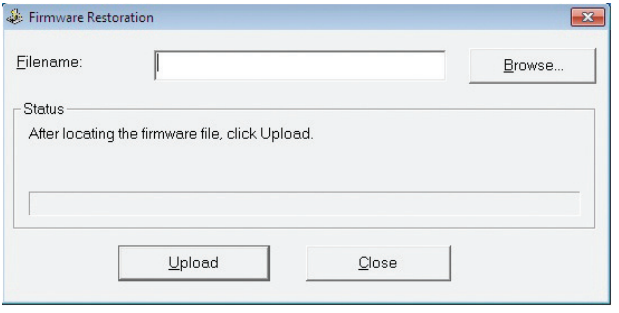


Firmware Restoration

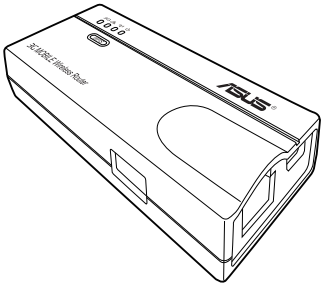
The Firmware Restoration utility is an emergency rescue tool that automatically searches for an ASUS Router that has failed during a firmware upload, and re-upload a firmware that you specify. A failed firmware upgrade will cause the ASUS Router to enter a failure mode, waiting for the Firmware Restoration utility to find and upload a new firmware. The process takes about three to four minutes.

This is not a firmware upgrade utility and cannot be used on a working ASUS Router. Normal firmware upgrades must be done through the web manager. Refer to **Chapter 4: Configuration** for more details.

To launch the Firmware Restoration utility, click **Start > All Programs > ASUS Utility > WL-330N3G Wireless Router > Firmware Restoration**.



Chapter 4



This chapter provides instructions on how to configure the ASUS Mobile Wireless Router using the web graphics user interface (web GUI).

Configuration

4.1 Overview

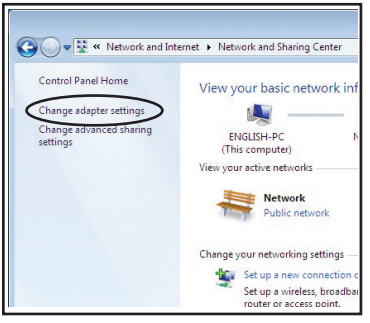
The web graphics user interface (web GUI) allows you to configure the ASUS Mobile Wireless Router using a web browser on your computer.

4.1.1 Adjusting the TCP/IP settings

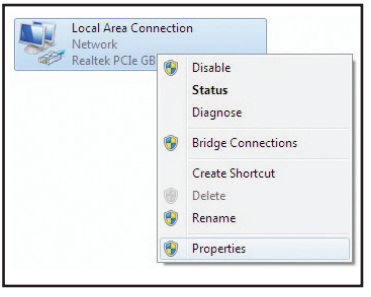
By default, the IP address of the ASUS Mobile Wireless Router is **192.168.1.1**, and the Subnet Mask is **255.255.255.0**. To access the configuration utility, assign a different IP address to the network adapter where the ASUS Mobile Wireless Router is connected.

To adjust the TCP/IP settings of the network adapter:

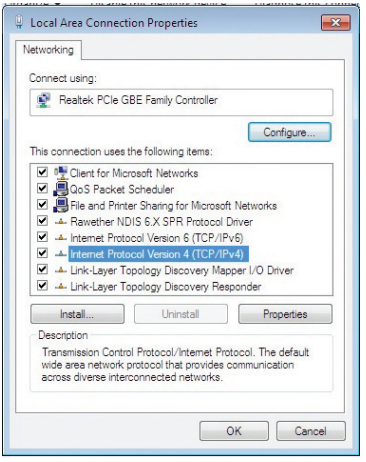
1. From the Windows® 7 desktop, click **Start > Control Panel > Network and Internet > Network and Sharing Center > Change adapter settings**.



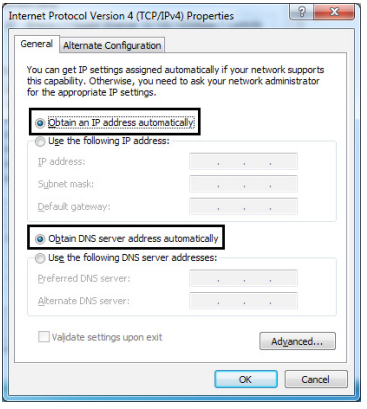
2. Right-click the network adapter used by the the ASUS Mobile Wireless Router, then select **Properties** from the pop-up menu. The **Local Area Connection Properties** window appears.



3. Double-click the **Internet Protocol Version 4** (**TCP/IPv4**) item to display the **Internet Protocol Version 4** (**TCP/IPv4**) **Properties** window.



4. Tick **Obtain an IP address automatically** and **Obtain DNS server address automatically** for your computer to automatically obtain an IP address from the DHCP and DNS servers.

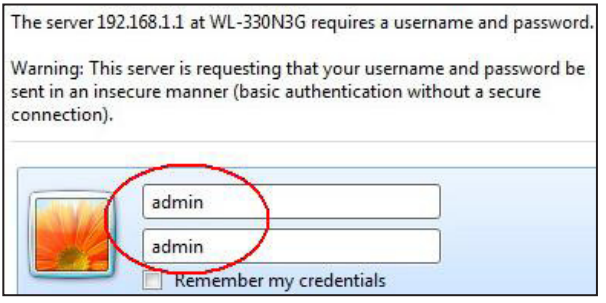


Changing the TCP/IP settings may require you to reboot your computer. Turn on the WL-330N3G immediately after rebooting your computer.

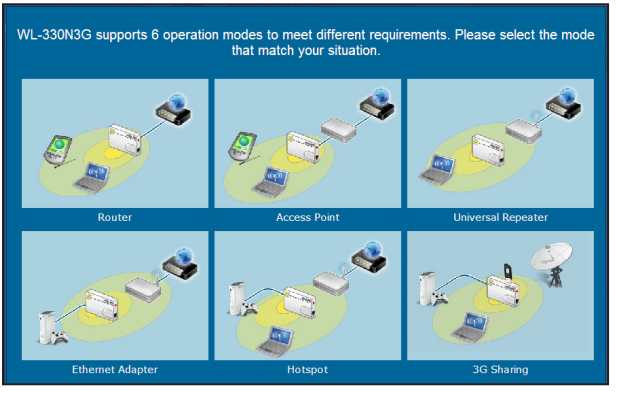
4.1.2 Launching the web GUI

To launch the web GUI:

1. In your web browser, enter **192.168.1.1**. The login screen appears.



2. Use **admin** as the username and password. The Setup Wizard is then displayed.



The Setup Wizard displays six operation modes that you can configure using the web GUI. Click one mode to open the corresponding page. Refer to the next section **4.2 Operation modes** for more details.

4.2 Operation modes

The ASUS WL-330N3G is designed with six operation modes: **Router**, **Access Point (AP)**, **Ethernet Adapter**, **Repeater**, **Hotspot**, and **3G Sharing**.

4.2.1 Router mode

In the Router mode, the ASUS WL-330N3G connects to the Internet via an ADSL or a cable modem, and your network environment has multi-users using the same IP to ISP.

In the Router mode:

- NAT is enabled.
- WAN is allowed using PPPoE, DHCP client, or static IP.
- UPnP and DDNS features, which are useful for home user, are supported.

To configure the ASUS WL-330N3G in Router mode:

1. Click the **Router** tab. The Router page appears.

Disable your PC's proxy settings when using the web GUI. Ensure the WL-330N3G and your PC are under the same subnet. Check the Internet protocol (TCP/IP) settings of your local area connection.

2. Specify a network name or SSID (Service Set Identifier), which is a unique identifier attached to packets sent over WLAN.
3. Select a security level to enable encryption methods:

   Low (None)

   Medium (WEP-64bits)

   Medium (WEP-128 bits)

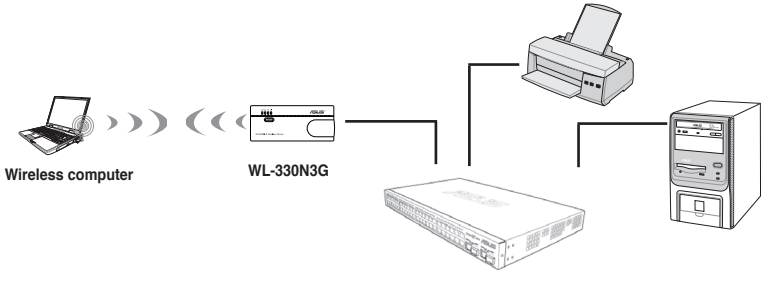
   High (WPA-PSK)
4. Select WAN Connection Type from the drop-down list. You are required to enter the user name and password if you are using PPPoE, PPTP, or L2TP connection. Contact your Internet Service Provider (ISP) for the user name and password.
5. Click **Apply** to save the settings.

After setting the ASUS WL-330N3G in Router mode, you need to connect the WL-330N3G's LAN port to an ADSL modem and connect your computer to WL-330N3G's SSID via wireless connection.

For more details on setting up the advanced functions, refer to the section **4.3 Advanced Setting**.

4.2.2 Access Point (AP) mode

In the **Access Point (AP) mode**, you can connect the Ethernet port and your wireless devices into the same local area network (LAN).



To configure the ASUS WL-330N3G in Access Point/AP mode:

1. Click the **Access Point** tab. The Access Point page appears.

2. Specify a network name or SSID (Service Set Identifier), which is a unique identifier attached to packets sent over WLAN.
3. Select a security level to enable encryption methods:

   Low (None)

   Medium (WEP-64bits)

   Medium (WEP-128 bits)

   High (WPA-PSK)
4. Click **Apply** to save the settings.

Notes:

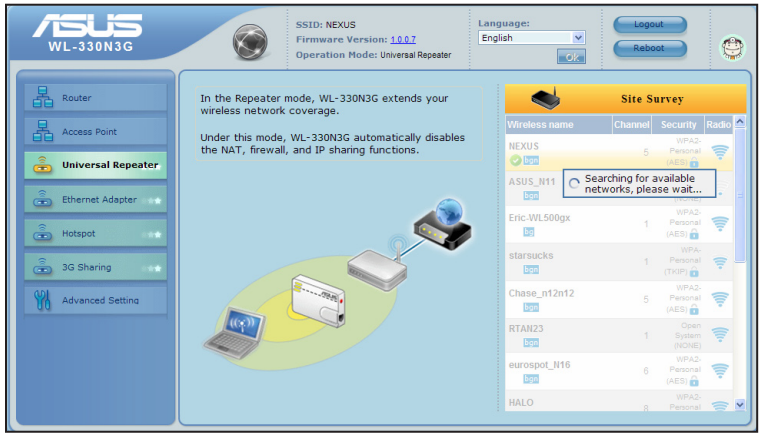
- For more details on setting up the advanced functions, refer to section **4.3. Advanced Setting**.
- Use the ASUS Device Discovery to search for your wireless router. For more details, refer **3.1.1 Launching the utilities**.

4.2.3 Repeater mode

In the **Repeater mode**, the ASUS WL-330N3G extends your wireless network coverage.

To configure the ASUS WL-330N3G in Repeater mode:

1. Click the **Universal Repeater** tab. The Universal Repeater page appears.



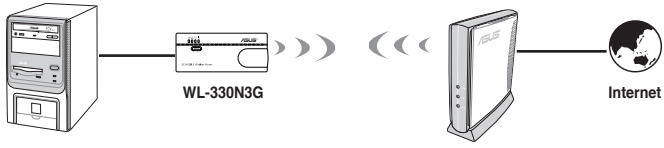
2. From the available list of devices in LAN, select the device you want to connect to.
3. Click **Connect**.

Notes:

- For more details on setting up the advanced functions, refer to section **4.3. Advanced Setting**.
- Use the ASUS Device Discovery to search for your wireless router. For more details, refer **3.1.1 Launching the utilities**.

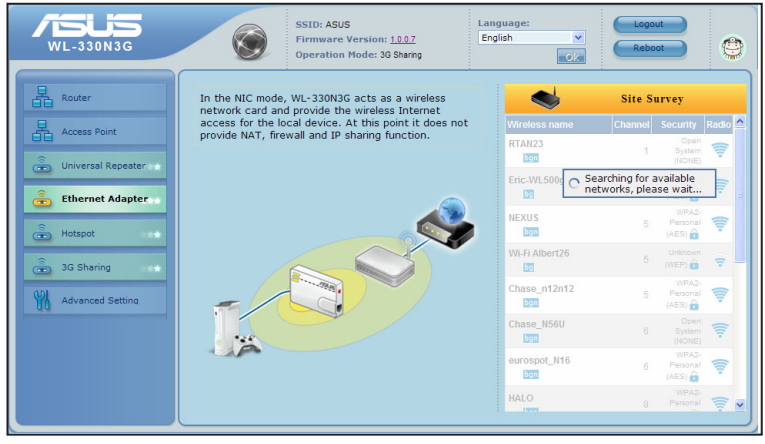
4.2.4 Ethernet Adapter mode

In the **Ethernet Adapter mode**, you can enable any Ethernet-capable device to go wireless.



To configure the ASUS WL-330N3G in Ethernet Adapter mode:

1. Click the **Ethernet Adapter** tab. The Ethernet Adapter page appears.



2. From the available list of devices in LAN, select the device you want to connect to.
3. Click **Connect**.

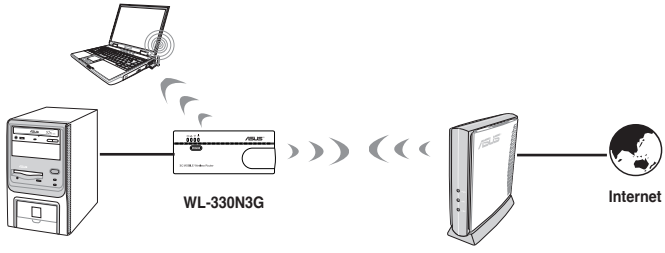
Notes:

- For more details on setting up the advanced functions, refer to section **4.3. Advanced Setting**.
- The DUT's IP address is changed to **192.168.220.1**.

4.2.5 Hotspot mode

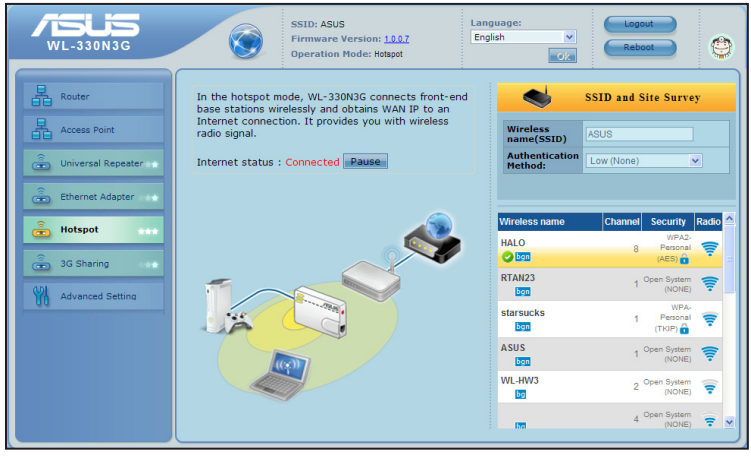
In Hotspot mode, WL-330N3G allows WiFi devices to share an Internet connection.

Before using this mode, ensure that you subcribe to or pay for a WiFi hotspot account with a WiFi service provider for your wireless router. Other WiFi devices can then access the Internet via your wireless router.



To configure the ASUS WL-330N3G in Hotspot mode:

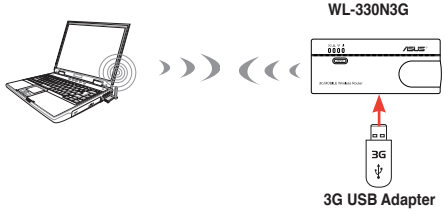
1. Click the **Hotspot** tab. The Hotspot page appears.



2. Specify a network name or SSID (Service Set Identifier), which is a unique identifier attached to packets sent over WLAN.
3. Select a security level to enable encryption methods.
4. From the available list of devices, select the device you want to connect to.
5. Click **Connect**.

4.2.6 3G Sharing mode

In 3G Sharing mode, you are allowed to share 3G Internet connection with other Wi-Fi available devices.



To configure the ASUS WL-330N3G in 3G Sharing mode:

1. Click the **3G Sharing** tab. The 3G Sharing page appears.

2. Configure the following settings:

   Enable HSDPA: Select **Enable HSPDA**.

   3G/3.5G USB Adapter: Select your 3G USB adapter.

   Location: Select your ISP's location.

   ISP: Select your ISP.

   If your ISP or Location is not included in the list, click **More Details...** and manually configure the settings. Refer to your ISP for the information of APN service name, PIN code, dial number, account name, and password.

3. Click **Apply**.

The connection is successfully established when the 3G LED turns solid blue. Otherwise, the connection has failed.

Visit **http://event.asus.com/2009/networks/3gsupport** to check the list of 3G dongles that your 3G mobile wireless router support. Ensure that all ISP settings such as APN, Dial number, PIN, username, and password, are correct.

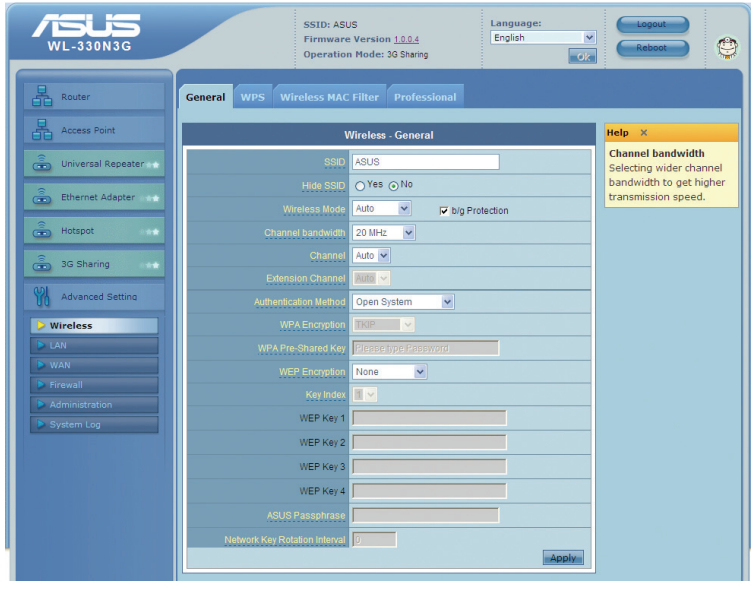
4.3 Advanced setting

When you click the link **Advance Setting** from any of the modes, the screen shown below is displayed.

4.3.1 Wireless

Click an item on the page and follow the instructions to set up the ASUS WL-330N3G.

General



SSID

The SSID is an identification string of up to 32 ASCII characters that differentiate the ASUS WL-330N3G from other manufacturers. The SSID is also referred to as the “ESSID” or “Extended Service Set ID.” You can use the default SSID and radio channel unless more than one WL-330N3G is deployed in the same area. In that case, you should use a different SSID and a radio channel for each WL-330N3G. All ASUS Wireless APs/Routers and ASUS 802.11n/802.11g/802.11b WLAN client adapters must have the same SSID to allow a wireless mobile client to roam. By default, the SSID is set to “ASUS”.

Wireless Mode

This field indicates the 802.11n interface mode. Selecting “Auto” allows 802.11g, 802.11b, and 802.11n clients to connect to WL-330N3G. Selecting “b/g Mixed” allows 802.11b/g/n clients to connect to WL-330N3G, but 802.11n clients only run at a speed of 54Mbps. Selecting “n only” maximizes performance, but prevents 802.11b/g clients from connecting to your device. Selecting “b only” allows only 802.11b clients to connect to your device. Selecting “g only” allows only 802.11g clients to connect to your device. If “b/g Protection” is checked, protection of 11g or 11b traffic is enabled automatically in the presence of 11g/11b traffic.

Channel

The 802.11n/802.11g/802.11b specifications supports up to 14 overlapping channels for radio communication. To minimize interference, configure each ASUS WL-330N3G to be non-overlapping; select Auto from the Channel drop-down list to enable the system to select a clear channel during boot up as your operating channel.

Based on your site survey of your network facility, make sure that all the ASUS WL-330N3G sharing the same channel, or channels in close number frequency, are located far from each other as possible.

Authentication Method

This field enables you to set different authentication methods which determine different encryption schemes. The relationships among Authentication Method, WPA Encryption, WPA Pre-Shared Key, WEP Encryption, Passphrase, and WEP Keys are listed in the following table. If all your clients support WPA, using "WPA-PSK" is recommended for better security.

Authentication Method	WPA/WEP Encryption	WPA Pre-Shared Key Passphrase	WEP Key 1-4
Open System	None WEP (64 bits) WEP (128 bits)	Not required 1-64 characters 1-64 characters	Not required 10 hex 26 hex
Shared key	WEP (64 bits) WEP (128 bits)	1-64 characters 1-64 characters	10 hex 26 hex
WPA-Personal	TKIP+AES	8-63 characters	Not required
WPA2-Personal	TKIP+AES	8-63 characters	Not required
WPA-Auto-Personal	TKIP/AES/ TKIP+AES	8-63 characters	Not required

WPA Encryption

When "WPA-Personal", "WPA2-Personal", or "WPA-Auto-Personal" authentication method is used, TKIP (Temporal Key Integrity Protocol) and AES encryption schemes are applied.

WPA Pre-Shared Key

Select "TKIP" or "AES" in the WPA Encryption, this field is used as a password to begin the encryption process. 8 to 63 characters are required.

WEP Encryption

When "Open System", or "Shared Key" authentication methods are selected, traditional WEP encryption is applied.

The following section explains low-level (64-bit) and high-level (128-bit) WEP Encryption schemes:

64-bit WEP Encryption

64-bit WEP and 40-bit WEP are the same encryption methods and can interoperate in a wireless network. This level of WEP encryption uses a 40-bit (10 Hex character) encryption scheme as a secret key, which is set by the user, and a 24-bit "Initialization Vector" scheme, which is not under user control.

Together these two schemes make a 64-bit (40 + 24) encryption scheme. Some vendors refer to this level of WEP as 40-bit and others refer to this as 64-bit. ASUS WLAN products use the term 64-bit when referring to this lower level of encryption.

128-bit WEP Encryption

104-bit WEP and 128-bit WEP are the same encryption method and can interoperate on a wireless network. This level of WEP encryption uses a 104-bit (26 Hex character) encryption scheme as a secret key which is set by the user, and a 24-bit "Initialization Vector", which is not under user control.

Together these two schemes make a 128-bit (104 + 24) encryption scheme. Some vendors refer to this level of WEP as 104-bit and others refer to this as 128-bit. ASUS WLAN products use the term 128-bit when referring to this higher level of encryption.

Key Index

The Default Key field lets you specify which of the four encryption keys to use to transmit data on your wireless LAN. As long as the ASUS WL-330N3G or wireless mobile client with which you are communicating has the same key in the same position, you can use any of the keys as the default key.

WEP Key

You can set a maximum of four WEP keys. A WEP key is either 10 or 26 hexadecimal digits (0~9, a~f, and A~F) based on whether you select 64-bits or 128-bits in the WEP pull-down menu. The ASUS WL-330N3G and ALL of its wireless clients MUST have at least the same default key.

If the ASUS WL-330N3G and ALL of its wireless clients use the same four WEP keys, select "key rotation" to maximize security. Otherwise, choose one key in common as the default key.

ASUS Passphrase

Select “WEP-64bits” or “WEP-128bits” in the Encryption field, and the Access Point generates four WEP keys automatically. A combination of up to 64 letters, numbers, or symbols is required. Alternatively, leave this field blank and type in four WEP keys manually.

WEP-64bit key: 10 hexadecimal digits (0~9, a~f, and A~F)

WEP-128bit key: 26 hexadecimal digits (0~9, a~f, and A~F)

The ASUS WLAN family of products uses the same algorithm to generate WEP keys. It eliminates the need for users to remember passwords and maintains compatibility between products. But, this method to generate WEP keys is not as secure as manual assignment.

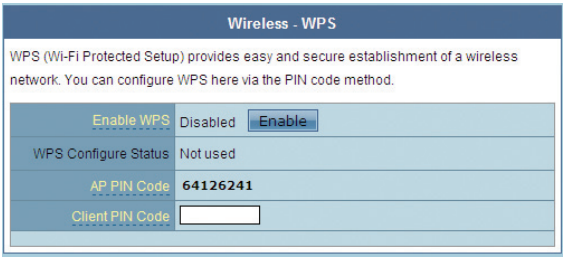
Network Rotation Key Interval

This field specifies the time interval (in seconds) after which a WPA group key is changed. Enter ‘0’ (zero) to indicate that a periodic key-change is not required.

WPS

Wi-Fi Protected Setup (WPS) provides easy and secure establishment of a wireless network. You can configure WPS here via the PIN code method.

WPS supports Open system, WPA-Personal, and WPA2-Personal authentication methods, but does not support Shared Key.



Notes:

- To remove the PIN code, press the Restore button at the bottom of the device.
- Use the WPS button in Router mode, and WPS button and PIN code method on 3G sharing mode. Access Point (AP), Hotspot, Repeater and Ethernet Adapter modes do not support the WPS function. For more details on the operation modes, refer to section **4.2 Operation modes**.

Using WPS Wizard

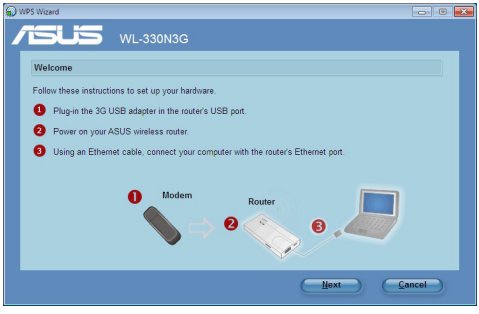
Note:

- Ensure that you use a wireless LAN adapter with WPS function.
- Windows® operating systems and wireless LAN cards/adapters that support WPS:

OS Support	Wireless Adapter Support
Windows Vista 32/64 Windows 7 32/64 Windows 2008	ASUS/Intel wireless LAN card (not support WL-167g and WL-160W) ASUS WL-167g v2 driver v.3.0.6.0 or later ASUS WL-160N/WL-130N driver v.2.0.0.0 or later
Windows XP SP2/SP3 Windows 2003 32-bit SP2/SP3	ASUS/Intel wireless LAN card (not support WL-167g and WL-160W) ASUS WL-167g v2 driver v.1.2.2.0 or later ASUS WL-160N/WL-130N driver v.1.0.4.0 or later
Windows XP/2003 64-bit Windows XP 32-bit SP1/ XP 32-bit Windows 2003 32-bit SP1 / 2003 32-bit Windows 2000 SP4	ASUS wireless LAN card with ASUS WLAN Utility ASUS WL-167g v2 driver v.1.2.2.0 or later ASUS WL-160N/WL-130N driver v.1.0.4.0 or later

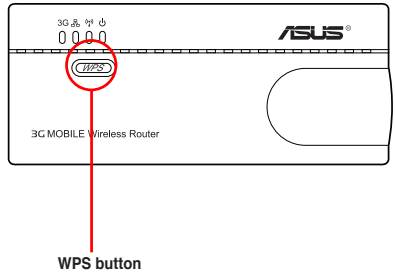
To use WPS Wizard:

1. Follow the onscreen instructions to set up your hardware. When done, click **Next**.

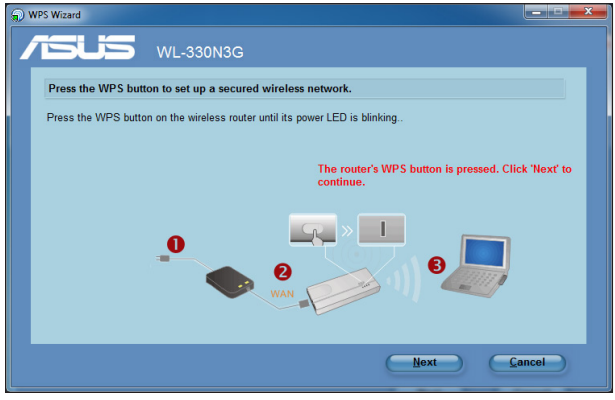


Note: Use the WPS Wizard with one wireless client at a time. If the wireless client cannot discover the wireless router, shorten the distance between the client and the router.

2. Press the WPS button on your router.



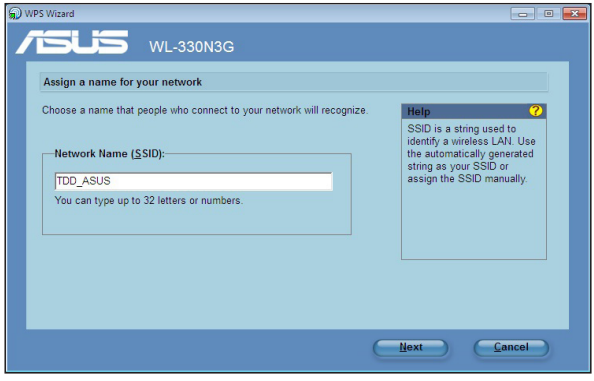
3. On the WPS Wizard, click **Next** to continue.



Notes:

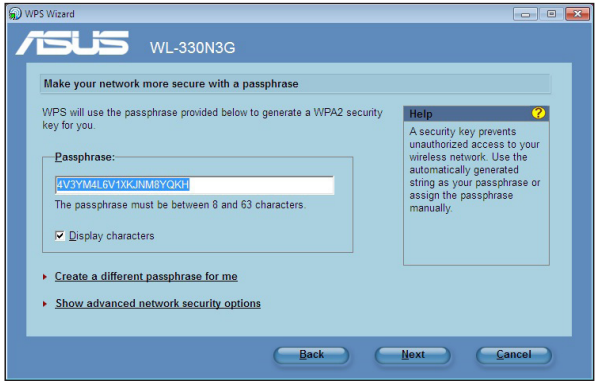
- When running WPS, the Internet connection pauses briefly then reestablishes the connection.
- If the WPS button is pushed without running the WPS Wizard, the PWR indicator flashes and Internet connection pauses briefly and then reestablishes the connection.

4. Key in desired network name or SSID (service set identifier). When done, click **Next**.

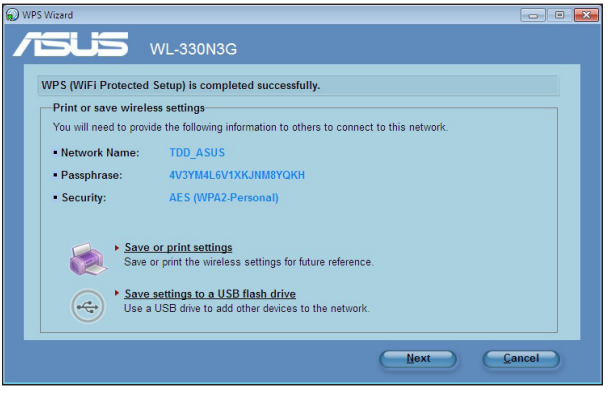


5. Create and key in a passphrase consisting of 8-63 characters or use the automatically generated passphrase then click **Next**.

   A passphrase is a sentence, phrase, or sequence of alpha-numeric characters used to generate a security key.

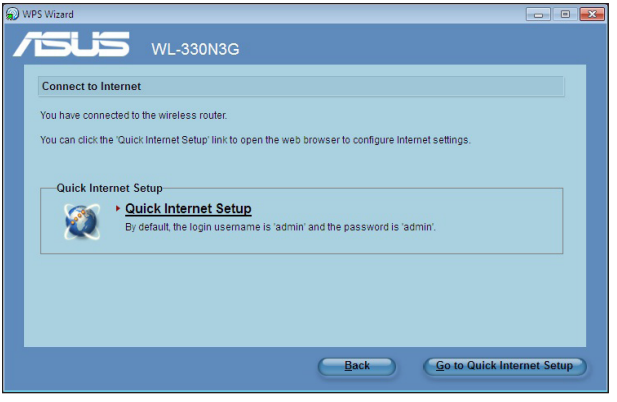


6. When finished, click **Save or print settings** for future reference or **Save settings to a USB flash drive** to add other devices to the network. Click **Next** to connect to the Internet.



Note: For more details on adding devices to the network using a USB flash drive, refer to the section **Adding network devices using a USB flash drive** on the next page.

7. You have connected to the wireless router. If you want to configure the Internet settings, click **Quick Internet Setup**.

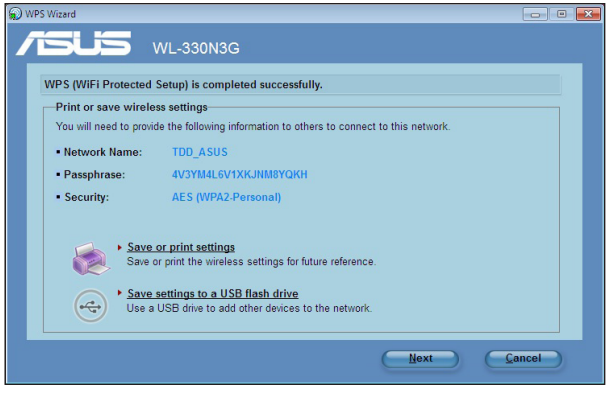


Adding network devices using a USB flash drive

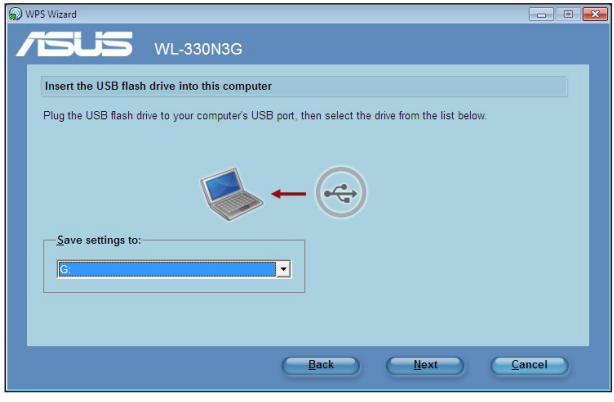
With the WPS utility, you can add devices to your network using a USB flash drive.

To add network devices using a USB flash drive:

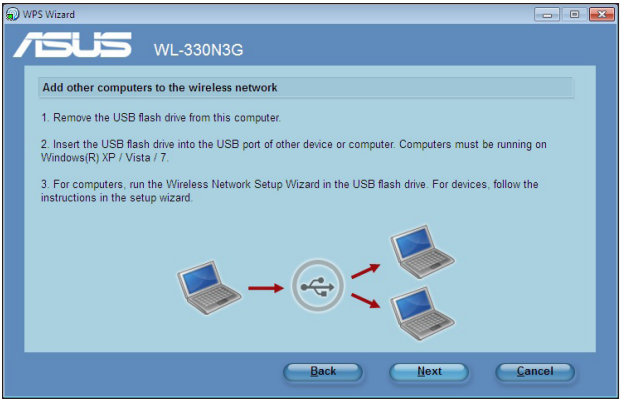
1. In the WPS Wizard, click **Save settings to a USB flash drive**.



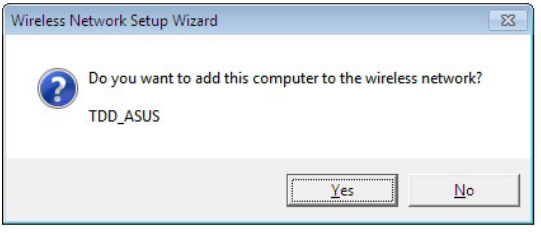
2. Insert a USB flash drive into your computer's USB port, then select the drive from the dropdown list. When done, click **Next**.



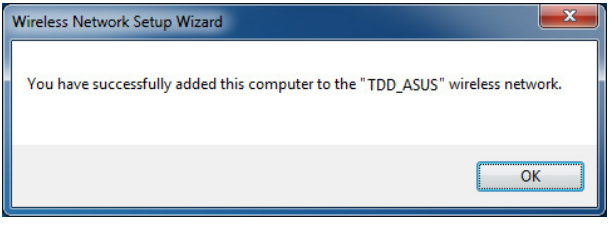
3. Unplug the USB flash drive from your computer then insert it to the other computer that you want to add to your wireless network.



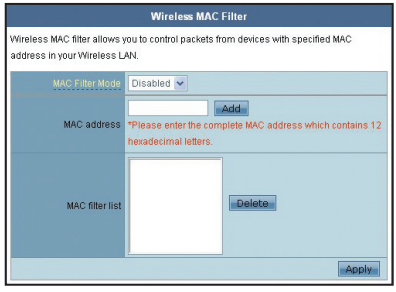
4. Locate **SetupWireless.exe** from the USB drive, and double-click to run it. Click **Yes** to add the computer to the wireless network.



5. Click **OK** to exit the **Wireless Network Setup Wizard**.



Wireless MAC Filter



Pull down menu items:

Disable (no info required)

Accept (need to input information)

Reject (need to input information)

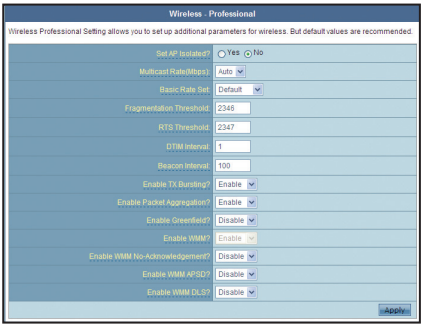
For security, the ASUS WL-330N3G allows you to accept or reject wireless mobile clients.

The default setting of “Disable” allows any wireless mobile client to connect. “Accept” only allows those entered into this page to connect. “Reject” prevents those entered into this page from connecting.

Adding a MAC Address

The Known Client List collects MAC addresses of known clients, associated to the AP. To add a MAC address to the Access Control List, enter MAC address, then click “Add” button.

Professional



This section allows you to set up additional parameters for the wireless router function. We recommend that you use the default values for all items in this window.

Set AP Isolated - Selecting "Yes" to prevent wireless client from communicating with each other.

Multicast Rate (Mbps) - This field allows you to specify the transmission rate. Leave on "Auto" to maximize performance versus distance.

Basic Rate Set - This field indicates the basic rates that wireless clients must support. Use "1 & 2 Mbps" only when backward compatibility is needed for some older wireless LAN cards with a maximum bit rate of 2Mbps.

Fragmentation Threshold (256-2346) – Fragmentation is used to divide 802.11 frames into smaller pieces (fragments) that are sent separately to the destination. Set a specific packet size threshold to enable fragmentation. If there is an excessive number of collisions on the WLAN, experiment with different fragmentation values to increase the reliability of frame transmissions. The default value (2346) is recommended for normal use.

RTS Threshold (0-2347) – The RTS/CTS (Request to Send/Clear to Send) function is used to minimize collisions among wireless stations. When RTS/CTS is enabled, the router refrains from sending a data frame until another RTS/CTS handshake is completed. Set a specific packet size threshold to enable RTS/CTS. The default value (2347) is recommended.

DTIM Interval (1-255) – DTIM (Delivery Traffic Indication Message) is a wireless message used to inform clients in Power Saving Mode when the system should wake up to receive broadcast and multicast messages. Type the time interval in which the system will broadcast a DTIM for clients in Power Saving Mode. The default value (3) is recommended

Beacon Interval (1-65535) – This field indicates the time interval in milliseconds that a system broadcast packet, or beacon, is sent to synchronize the wireless network. The default value (100 milliseconds) is recommended.

Enable TX Bursting – This field allows you to enable TX-bursting mode to improve performance with wireless clients that also support TX-bursting.

Enable Packet Aggregation - This field allows you to enable Packet Aggregation.

Enable Greenfield - This field allows you to enable Greenfield.

Enable WMM – This field allows you to enable WMM to improve multimedia transmission

Enable WMM No-Acknowledgement – This field allows you to enable WMM No-Acknowledgement.

Enable WMM APSD - This field allows you to enable WMM APSD.

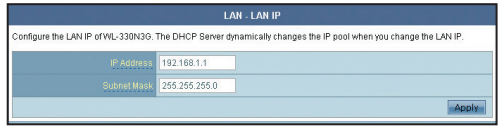
Enable WMM DLS - This field allows you to enable WMM DLS.

4.3.2 LAN

Click this item on the menu and follow the instructions to setup the ASUS WL-330N3G.

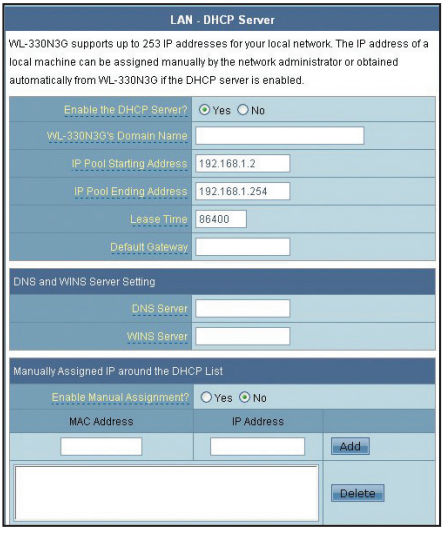
LAN IP

This page allows you to configure the LAN IP of WL-330N3G. The DHCP Server dynamically changes the IP pool when you change the LAN IP.



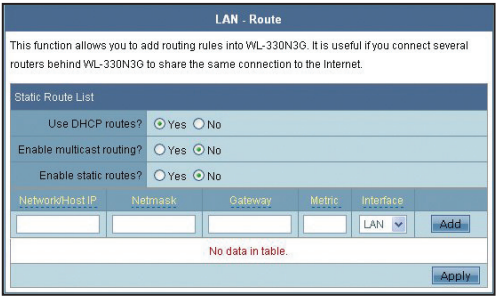
DHCP Server

The ASUS WL-330N3G supports up to 253 IP addresses for your local network. The IP address of a local machine can be manually assigned by the network administrator or obtained automatically from WL-330N3G if the DHCP server is enabled.



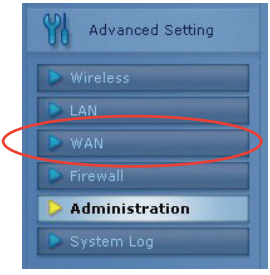
Route

This function allows you to add routing rules into the ASUS WL-330N3G. It is useful if you connect several routers behind WL-330N3G to share the same connection to the Internet.



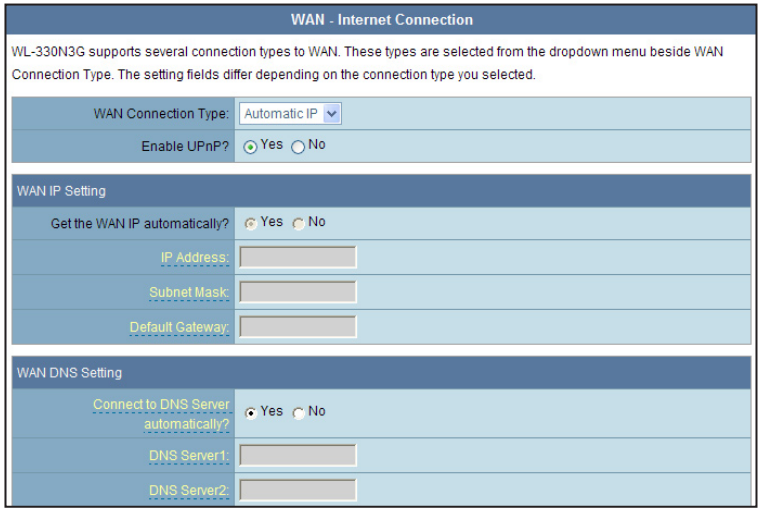
4.3.3 WAN

Click this item on the menu and follow the instructions to setup the ASUS WL-330N3G.



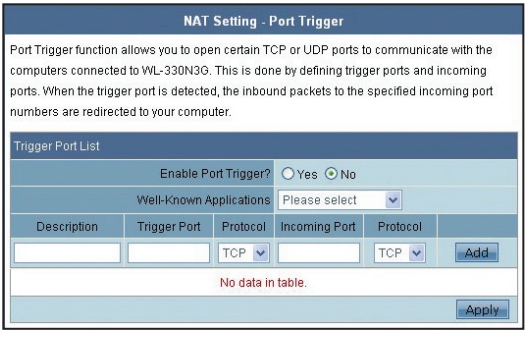
Internet Connection

WL-330N3G supports several connection types to WAN. The settings fields differ depending on the connection type you selected.



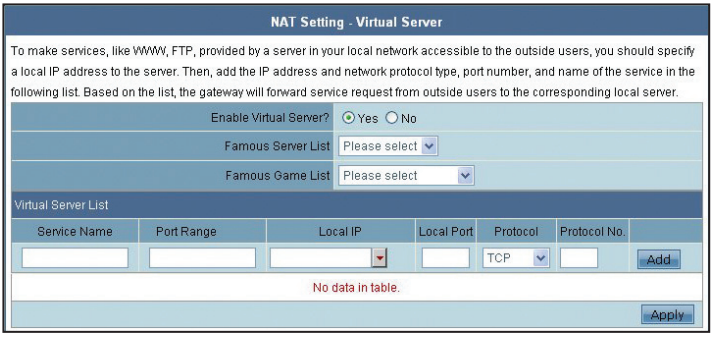
Port Trigger

This function allows you to open certain TCP or UDP ports to communicate with the computers connected to the ASUS WL-330N3G. This is done by defining trigger ports and incoming ports. When the trigger port is detected, the inbound packets to the specified incoming port numbers are redirected to your computer.



Virtual Server

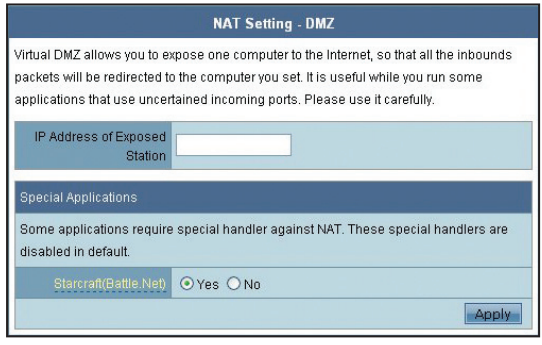
Virtual Server allows you to make services, like WWW, FTP, provided by a server in your local network accessible for outside users.



Virtual DMZ

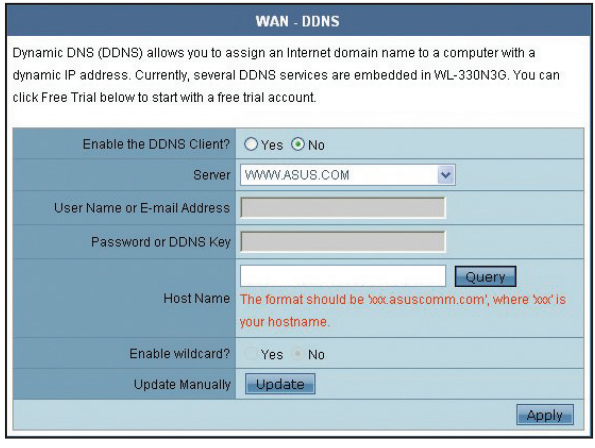
This function allows you to expose a computer to the Internet, so that all inbound traffics will be redirected to the computer you set. It is useful when you run some applications that use uncertain incoming ports.

Use this function carefully.



DDNS

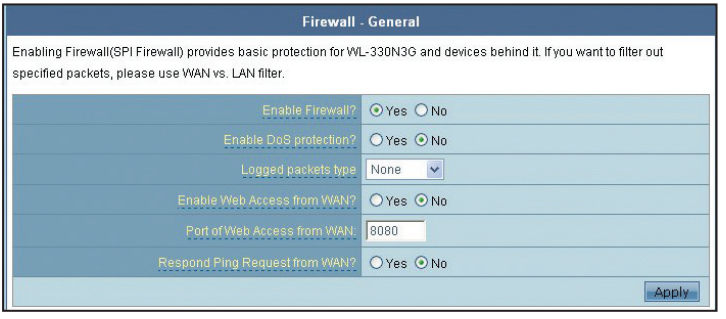
This function allows you to assign an Internet domain name tto a computer with a dynamic IP address. Currently, several DDNS services are embeded in WL-330N3G.



4.3.4 Internet Firewall

General

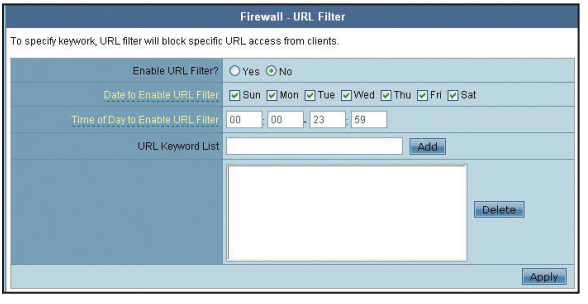
This function allows you to configure the basic security for your WL-330N3G and other devices connected to it.



If you want to filter out specific packets, refer to the next section **LAN to WAN Filter**.

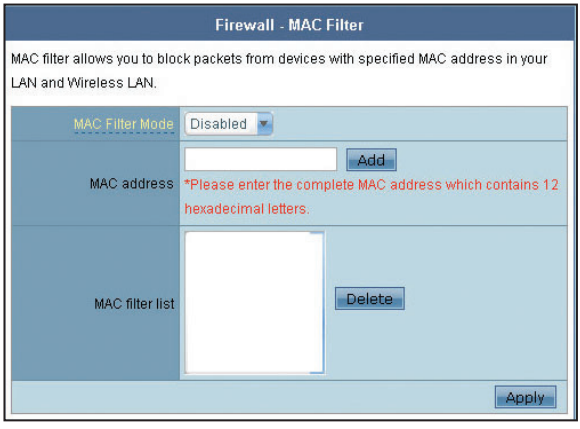
URL Filter

This function allows you to block specific URL access from your local network.



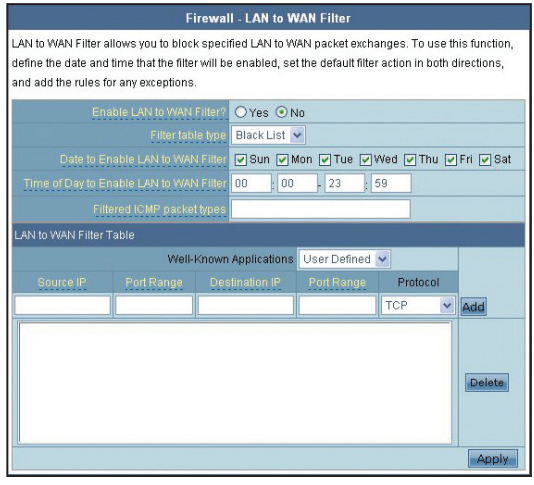
MAC Filter

This function allows you to block packets from devices with specific MAC address in your LAN and Wireless LAN.



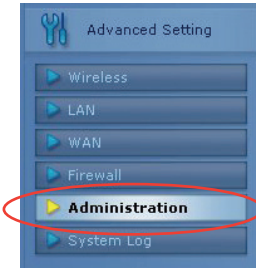
LAN to WAN Filter

This function allows you to block specific packets between LAN and WAN. First, you should define the date and time that filtering will take place. Next, you should select the default action for filter in both directions and insert rules for any exceptions.



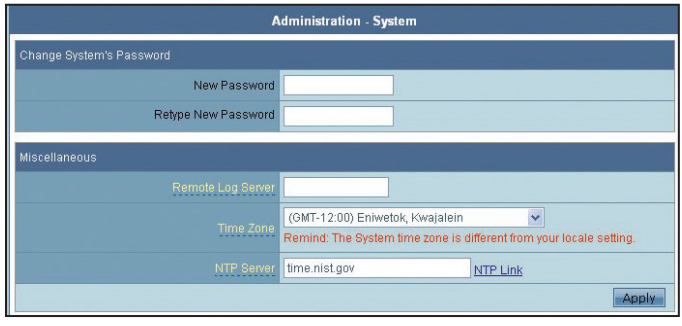
4.3.5 Administration

Click this item on the menu and follow the instructions to setup the ASUS WL-330N3G.

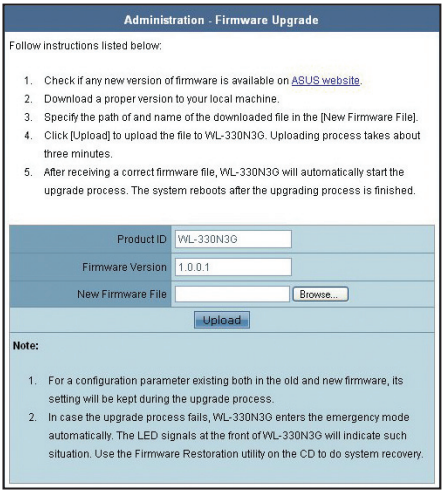


System

This function allows you to change your password and configure other settings such as Remote Log Server, Time Zone, and NTP Server.



Firmware Upgrade

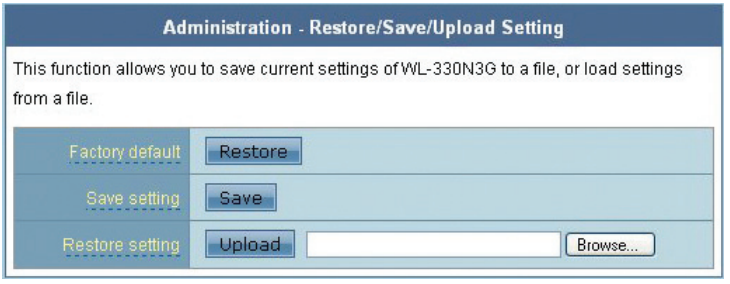


This page reports the Flash Code (Firmware) version installed in the ASUS WL-330N3G. Periodically, a new Flash Code is available for the ASUS WL-330N3G on ASUS's Web site. You can update the ASUS WL-330N3G's Flash Code using the Firmware Upgrade page under the Administration menu of the Web Manager. If you are experiencing a problem with your ASUS WLAN equipment, a Technical Support representative may ask you to give your device's Flash Code (Firmware) version.

Note: The firmware upgrade takes approximately 60 to 90 seconds. When the firmware upgrade is completed, you will be directed to the home page.

Restore/Save/Upload Setting

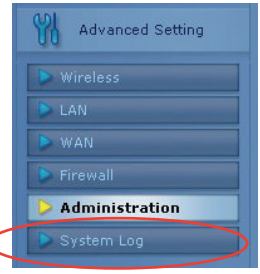
This function allows you to save current settings to a file, or load settings from a file. You can also restore the settings to the factory default settings.



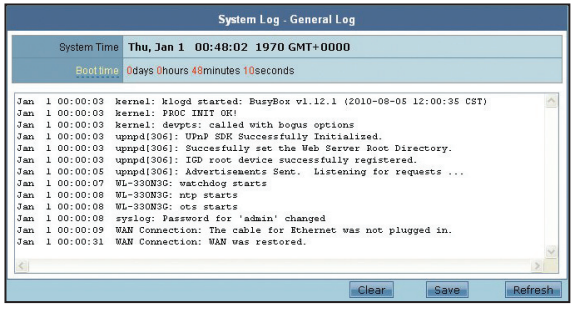
Note: You can also reset all settings to their factory defaults manually by pushing the “Restore” button on the ASUS WL-330N3G while it is ON. Push the “Restore” button with a pen or a paper clip for about 5 seconds or until the power LED starts blinking.

4.3.6 System Log

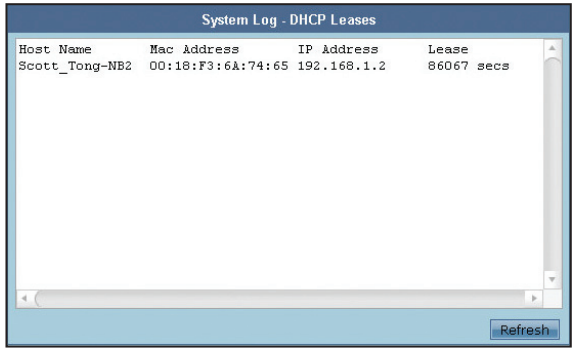
Click this item on the menu to view related information about the ASUS WL-330N3G.



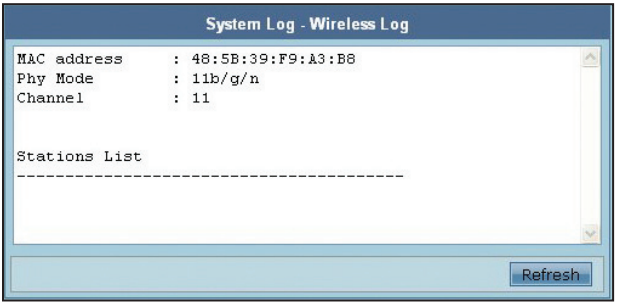
General Log



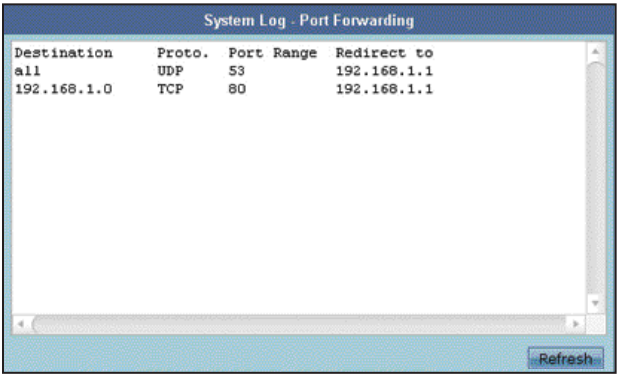
DHCP Leases



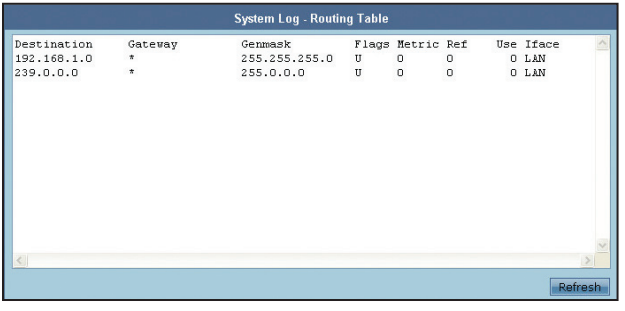
Wireless Log



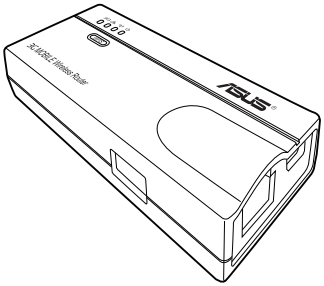
Port Forwarding



Routing Table



Chapter 5



This chapter provides instructions on how to use the ASUS Mobile Wireless Router on various network setups.

Using the device

5.1 Using the device in a local network

You can use the WL-330N3G to connect a wireless LAN-enabled computer to a local network with or without a DHCP server.

To connect a wireless LAN-enabled computer to a local network:

1. Switch the WL-330N3G to AP mode (Default SSID: ASUS).
2. Connect one end of the supplied RJ-45 cable to the Ethernet port of the device and the other end to the Ethernet port of the local network.
3. Use the wireless LAN adapter software in the wireless LAN-enabled computer to perform a **Site Survey**.
4. Establish connection with the WL-330N3G.
5. Set the IP configuration of the computer to establish connection to the local network. Verify your connection.

Use the Wireless Setting Utility to change the WL-330N3G SSID or encryption settings.

5.2 Replacing the computer Ethernet cables

You can use the WL-330N3G to replace your wireless LAN-enabled computer cable connection to an ADSL or cable modem.

To do this:

1. Switch the WL-330N3G to AP mode. (Default SSID: ASUS), then turn on the device.
2. Connect one end of the supplied RJ-45 cable to the Ethernet port of the device and the other end to the Ethernet port of the ADSL or cable modem.
3. Use the wireless LAN adapter software in the wireless LAN-enabled computer to perform a **Site Survey**.
4. Establish connection with the WL-330N3G.
5. Set the IP configuration of the computer to establish connection to the local network. Verify your connection.

5.3 Replacing the cable connections of other devices

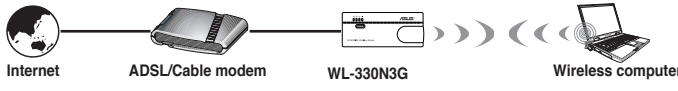
You can also use the WL-330N3G to replace your Xbox, PlayStation® 2, orset-top box network cable connection.

To do this:

1. Switch the WL-330N3G to Ethernet adapter mode using the mode switch. (Default SSID: ASUS)
2. Place the WL-330N3G nearest the AP you wish to connect, then turn on the device.
3. Connect one end of the supplied RJ-45 cable to the Ethernet port of the device and the other end to the Xbox, PlayStation® 2, or set-top box Ethernet port.
4. Set the IP address of the Xbox, PlayStation® 2, or set-top box toestablish connection to the local network. Verify your connection.

5.4 Sharing Internet connection with other computers

Refer to the typical network configuration below and the table on the next page for information on Internet connection sharing with other computers in your office or home network.



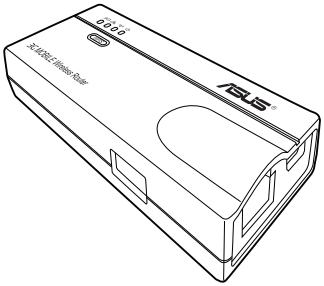
Set the WL-330N3G to AP mode before sharing an Internet connection with other computers in your network.

Table 4-1: Internet connection sharing matrix

If your Internet connection is	Then set the IP of other computer(s)	Number of allowed Internet connections
xDSL[1] with dynamic IP (PPPoE[2] account)	ISP automatically assigns the IP (using PPPoE dial-up)	Depends on the Internet Service Provider (ISP)
xDSL with static IP	to the provided static IP	Depends on the Internet Service Provider (ISP)
xDSL/Cable with a router and enable DHCP[3] server	The DHCP server automatically assigns the IP	Depends on the DHCP server, usually about 253

[1]**xDSL -** ADSL (Asymmetric Digital Subscriber Line) or DSL (Digital Subscriber Line)
[2]**PPPoE -** Point-to-Point over Ethernet
[3]**DHCP -** Dynamic Host Configuration Protocol

Appendix



The Appendix features a troubleshooting guide for solving common problems you may encounter when using the ASUS Mobile Wireless Router.

Troubleshooting

This troubleshooting guide provides solutions to some common problems that you may encounter while installing or using the ASUS Mobile Wireless Router. These problems require simple troubleshooting that you can perform by yourself. Contact the ASUS Technical Support if you encounter problems not mentioned in this section.

Problem	Action
The ASUS Mobile Wireless Router does not power up.	• Use a test meter to measure the voltage output of the power source through the power plug. • Check if the power plug is properly connected to the device.
Other devices cannot communicate with the ASUS Mobile Wireless Router through a wired network connection.	• Verify your network configuration to ensure that there is no IP address duplication. Turn off the device in question, then ping the assigned IP address of the device. Make sure no other device responds to that address. • Check if the cables have the proper pin outs and connectors. You may also use another LAN cable. • Make sure the hub, switch, or computer connected to the ASUS Mobile Wireless Router supports 10Mbps or 100Mbps speed. Do this by check the ASUS Mobile Wireless Router and the Hub LEDs. When you connect the ASUS Mobile Wireless Router to a 10/100 Mbps hub, both the Hub LED and the ASUS Mobile Wireless Router Ethernet LEDs should light up.
My ASUS WLAN card can not associate with the ASUS Mobile Wireless Router.	• Make sure your WLAN card has the same specifications as the ASUS Mobile Wireless Router (IEEE 802.11b/g/n). Minimize the distance between the devices. The ASUS WLAN card may be out of range of the ASUS Mobile Wireless Router. • Check if the ASUS Mobile Wireless Router and the ASUS WLAN card have the same SSID. • When encryption is enabled, check if the ASUS Mobile Wireless Router and the ASUS WLAN card have the same encryption settings. • Check if the Wireless LED of the ASUS Mobile Wireless Router is on. • When the Access Control table is enabled, check if the MAC address of the ASUS WLAN card is included in the Access Control table. • Check if the ASUS Mobile Wireless Router is in “Access Point” mode.

Problem	Action
The throughput seems slow.	Avoid placing the device behind a metal object. Clear obstacles between the AP and the device. Try moving the client closer to the ASUS Mobile Wireless Router and check if the throughput increases. Consider adding a second ASUS Mobile Wireless Router to implement roaming.
I can not access the ASUS Mobile Wireless Router web configuration page.	To access the ASUS Mobile Wireless Router web configuration page, your computer must have the same subnet as that of the ASUS Pocket Wireless AP. Adjust your network if your computer's subnet does not match that of the ASUS Mobile Wireless Router. The default IP address of the ASUS Mobile Wireless Router is "192.168.1.1". In special cases, when the ASUS Mobile Wireless Router in Ethernet adapter mode joins an AP network with the same IP address, reset the ASUS Mobile Wireless Router to access the Web Configuration utility again.
Where can I get a firmware file to upgrade the ASUS Mobile Wireless Router?	You may download the latest firmware file from the ASUS website (www.asus.com). Use the Firmware Upgrade page in the Web Configuration utility to update the ASUS Mobile Wireless Router firmware.
The ASUS Mobile Wireless Router Power LED continuously blinks for more than a minute.	Turn off the ASUS Mobile Wireless Router. Turn the device again and observe if the Power LED stops blinking. If the blinking continues, you need to restore the ASUS Mobile Wireless Router firmware. Use the Firmware Restoration utility to restore or update the ASUS Mobile Wireless Router firmware.
A wireless client wants to connect to the ASUS Mobile Wireless Router but can not get the correct IP from the DHCP server. (The ASUS Mobile Wireless Router has an enabled DHCP.)	Make sure the DHCP server is working properly. Some DHCP servers can only assign one IP address at a time. In this case, assign a fixed IP address to your ASUS Mobile Wireless Router.

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